Semester Lecture Plan

Name of the college: Government College of Arts, Science & Commerce, Sanquelim-Goa		
Name of Faculty: Dr. Dattaprasad D Narulkar	**Subject:** Chemistry	
Paper code: CHC-203 (Inorganic Chemistry)	**Program/Course: S.Y. B.Sc.**	**Division: -**
Academic year: 2025 - 2026	**Semester: IV**	**Total Lectures: 15 (Theory)**

Course Objectives:

1. **To understand the theoretical aspects related to inorganic qualitative analysis.**
2. **To study the comparative chemistry of s, p and d block elements.**
3. **To learn the chemistry of coordination compounds and understand their role in the biological systems.**
4. **To study the properties, structure and bonding in noble gases compounds.**

Course Learning Outcome:

Student will be able to

1. **List and recall key concepts in selected topics in inorganic chemistry.**

2. **Explain fundamental concepts like common ion effect, solubility product, trends in s-block, selected p-block, and transition metals, and basics of coordination compounds.**
3. **Apply principles to solve problems in Inorganic Qualitative Analysis, predict structures and geometries of selected s, p, d-block elements and nomenclature of coordination compounds.**
4. **Compare, contrast, analyse, and assess periodic trends in the s-block, selected p-block and d-block elements concerning their properties.**

Month	Lectures From	Lectures To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/Assignment	ICT Tools	Reference books
December	1/12/2025	06/12/2025	01	**Selected topics on p-block elements** **a. Chemistry of Group 13 elements:** Comparative study w.r.t. oxides, halides & hydrides. .		Smart board	Ref 1 and 2
December	08/12/2025	13/12/2025	01	Electron deficient compounds – BH_3, BF_3, BCl_3 with respect to Lewis acidity and applications.		Smart board	Ref 1 and 2
December	15/12/2025	20/12/2025		Boranes and types of Boranes, Wade's formula.			
December	22/12/2025	23/12/2025	01	Preparations, structure and bonding in diborane and tetraborane.	Discussion on compounds of group 13	Smart board	Ref 1 and 2
December	24/12/2025	01/01/2026	01	Christmas Break		Smart board	Ref 1 and 2
January	05/01/2026	10/01/2026	01	Introduction to carboranes. Borates: Introduction and classification		Smart boar	Ref 1 and 2

January	12/01/2026	17/01/2026	01	**b. Chemistry of Group 14 elements:** Comparative study w.r.t. oxides, halides & hydrides.		Smart board	Ref 1 and 2
January	19/01/2026	24/01/2026	01	Occurrence and extraction of Germanium. Preparation of extra pure Silicon and Germanium,		Smart board	Ref 1,2 and 3
January	26/01/2026	31/01/2026	01	applications in the semiconductor industry with special reference to Solar Panels.	Discussion on compounds of group 14	Smart board	Ref 1,2 and 3
February	02/02/2026	07/02/2026	01	Silicates: Introduction, classification and structure.		Smart board	Ref 1,2 and 3
February	02/02/2026	07/02/2026	01	**c. Chemistry of Group 15 elements:** Comparative study w.r.t. oxides & oxyacids, halides & hydrides.		Smart board	Ref 1,2 and 3
February	09/02/2026	14/02/2026		Structures of NO, NO_2 , N_2O, N_2O_4 .		Smart board	Ref 1,2 and 3
February	16/02/2026	21/02/2026	01	Synthesis of ammonia by Haber-Bosch process,			Ref 1,2 and 3
February	23/02/2026	28/02/2026	01	Synthesis of HNO3 by Ostwald's process	Discussion on compounds of group 14	Smart board	Ref 1,2 and 3
March	02/02/2026	07/02/2026	01	Introduction to fertilizers.		Smart board	Ref 1,2 and 3

March	09/03/2026	14/03/2026	01	Chemistry of Noble Gases Introduction, electronic configuration, chemical properties and uses. Clathrates.		Smart board	Ref 1,2 and 3
March	16/03/2026	21/03/2026	01	Revision		Smart board	Ref 1,2 and 3
March	23/03/2026	28/03/2026	01	Revision			
March	30/03/2026	31/03/2026	01	Revision			

Reference Books:

1. J. D. Lee, *Concise Inorganic* Chemistry, 5th Edn. Wiley India. 2003.
2. P. W. Atkins, T. L. Overton, J. P. Rourke, M. T. Weller & F. A. Armstrong, *Shriver & Atkins' Inorganic Chemistry*, 5th Edn.; Oxford University Press. 2010..
3. F. A. Cottton, G. Wilkinson and P. L. Gaus, *Basic Inorganic Chemistry.* 3rd Edn. Wiley India. 2007.
4.. B. R. Puri, L. R. Sharma and K. C. Kalia, *Principles of Inorganic Chemistry,* 33rd Edn, Vishal Publishing Co. 2020.

*** Assessment Rubrics**

Component	Max Marks
ISA 1	7.5
ISA 2	7.5
ISA 3	7.5
Semester End Exam	60
Practical	25
Total	100

*Best two ISA will be considered